Abstract of the Disclosure:

A processing tool for manufacturing semiconductor devices, e.g. a lithography cluster, has a device transfer area with an optical sensor (e.g. CCD-camera), and an illumination system.

5   A substrate (e.g., a semiconductor wafer, a reticle, or a mask for exposure on the wafer) that is transferred to or from one of its processing chambers can be scanned during its movement at low resolution. Scanning is performed before and after processing in at least one the processing chambers of the

10   processing tool. The images are compared and optionally subtracted from each other. Defects imposed to the substrate due to contaminating particles only during the present processes with sizes larger than 10 μm are visible on the subtracted image. Defects imposed earlier are diminished as

15   well as structures formed from a mask pattern below 10 μm. Pattern recognition allows efficient classification of the defects just detected in a processing tool. Semiconductor device yield and metrology capacity are advantageously increased.

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